

Peer Review File

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Review comments

The authors present a revised manuscript describing a 4-port technique for robotic lobectomy. One of the more popular methods for robotic lobectomy utilizes 5 ports (three for robotic working arms, one camera port and an assistant port). Typically, the assistant port is enlarged for specimen retraction. The authors describe a 4 port technique which uses a laparoscopic single port 30mm device which allows multiple devices to be accessed through one incision.

Comments 1. Lines 30 and 63, consider changing “operability” which has a connotation of an appropriateness for surgery to “while maintaining full functionality of all four robotic arms and the assistant.”

Reply 1: Thank you for your valuable suggestion. We have changed “operability” to “while maintaining full functionality of all four robotic arms and the assistant.”
Changes in the text: Line 28-29, 59-60, 141-142.

Comment 2. Lines 41-43, Consider, “Robotic surgery using the da Vinci Surgical System® (Intuitive Surgical Inc., Sunnyvale, CA, USA) has been covered by the medical insurance system since April 2018. Prior to this, 76% of lung cancer resections in Japan were performed VATS.”

Reply 2: Thank you for your suggestion. We have added “Prior to this, 76% of lung cancer resections in Japan were performed via VATS” to the highlighted portion of the text.
Changes in the text: Line 41-42.

Comment 3. Lines 45-57, it required this reviewer a native English speaker and experienced VATS and robotic surgeon several readings to understand this paragraph. Consider revising the wording. “Confronting upside
a. Line 56-57, do the authors mean that the access from a lower interspace provides inferior visualization of the apex of the chest compared to the “upside-down monitor setting” strategy?
b. Consider: “RATS techniques that utilize a more caudal camera port, provide inferior visualization for apex of the chest.”

Reply 3: Thank you for your valuable suggestion. We quoted "Confronting upside-down monitor setting" from the paper by Mun et al., who presented this VATS technique in Japan (Reference 4).

We have added the suggested sentence, “RATS techniques that utilize a more caudal camera port provide inferior visualization of the apex of the chest”, to the text.
Changes in the text: Line 54-55.

Comment 4. What is limiting about the Cerfolio technique regarding visualization of the apex of the chest?

a. In small patients, both conventional thoracoscopy and RATs, the superior hilum, mediastinum, and apex of the chest are extremely well visualized.

b. A more cephalad camera port would provide a view more analogous to the view from a conventional thoracotomy.

Figures 1 and 2 are oriented in an opposite manner with cranial on the left in Figure 1 and on the right in figure 2. If this can be easily done, they should be made to match.

Reply 4: In the Cerfolio technique, the camera and stapler face the same direction when the stapler is being passed through the truncus superior artery or the left upper ventral lobe branch. Thus, we believe that the visual field at the entrance of the blood vessel is good, but that at the exit is poor.

The figure 2 in the original submission is wrong. We have replaced it with the correct version at this resubmission.

Changes in the text: Figure 2.

Comment 5. Line79, consider, “...and used to for the robotic stapler and to provide retraction.”

Reply 5: Thank you for your valuable suggestion. We have used the suggested phrasing: “and used for the robotic stapler and to provide retraction.”

Changes in the text: Line 82-83.

Comment 6. Line 80 eliminate “and”

Reply 6: We have eliminated “and”. Thank you.

Changes in the text: Line 84.

Comment 7. Line 84, consider: “This is second right hand port.”

Reply 7: Thank you for your suggestion. We have added the suggested sentence.

Changes in the text: Line 83.

Comment 8. Line 85, consider: “8cm posterior to the second port in the fifth intercostal space a 30-mm access port was placed.

a. Review of figures 1 and 2 it is not clear that the access port is 8 cm posterior to the second port. It appears to be in the same anterior-posterior line as the second (8mm) port and is thus 8 cm posterior to the most caudal 12 mm port.

Reply 8: Thank you for pointing out our mistake. We have corrected the information about “port placement”.

Changes in the text: Surgical technique: port placement (right upper lobectomy) (Figure 1) (Line 73-87)

Comment 9. Lines 98-99, states that the first port is placed in the anterior axillary line and is the most inferior port there is a risk of injuring the diaphragm. The authors recommend visualizing this port as it is placed. This is a good safety tip, but the authors describe this as the first port to be placed. Many surgeons place a more superior port often a 5 mm port to allow insufflation and visualization of the remaining ports. How do the authors visualize this port placement?

Reply 9: Thank you for pointing out our mistake. We consider this point so important we have listed it as the second point in the Key considerations section.

We create the access port first. Then, insufflate with CO₂ to create artificial pneumothorax, and as you stated, it is important to insert the most inferior port on the anterior axial line while visualizing the insertion.

Changes in the text: Surgical technique: port placement (right upper lobectomy) (Figure 1) (Line 73-87)

Comment 10. Lines 124-125, the main advantages of minimally invasive surgery are decreased pain, decreased inflammatory response, decreased perioperative complications, and improved cosmesis. The argument that saving a single 8 mm port increases the minimally invasiveness of an operation a meaningfully would be difficult to prove.

a. The ongoing controversy of RATS vs VATS has proponents on both sides. Proponents of single port VATS using a 5 cm incision may argue that the summed total of incision length is greater with this 4-port technique.

Reply 10-a: Thank you for your comment. We compared our multi-port VATS and multi-port RATS. Single-port VATS has a completely different concept and is not the subject of our comparison.

Additionally, we do not intend to say that “Hamamatsu Method Kai” is the best approach. We proposed the 4-port technique that utilizes a laparoscopic single-port 30 mm device, which allows multiple devices to be accessed through one incision, as an option. We observed that our patients appreciate the benefit of having one less port.

Changes in the text: None.

b. Several groups have reported four port technique while eliminating the 4th robotic arm.

Reply 10-b: Thank you for your comment. The da Vinci Xi system has four arms, and we could obtain maximum benefit by using the four arms fully. Therefore, we

performed a 4-port surgery. The 3-port procedure permits the use of only three arms, meaning that operators cannot take full advantage of the da Vinci Xi system.

Changes in the text: None.

Comment 11. The goal of minimizing port sites while preserving the full functionality of the robot and the assistant is valid. Each additional incision carries a discrete risk of morbidity such as bleeding, neuropathic pain, or rarely infection. What is novel in this manuscript is the combined camera/assistant/access incision technique. The authors should consider focusing the manuscript on that point and less on the particular port placement strategy since it could be adapted to a Cerfolio technique in a straightforward fashion.

Reply 11: Thank you for your valuable suggestion. We have added the following sentence, “The novelty of this operative method is the combined camera/assistant/access incision”, to the conclusion.

Changes in the text: Conclusions (Line 142-143)